



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,276	07/24/2000	David A. Brown	2037.2006-000	5305

21005 7590 02/22/2005

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.
530 VIRGINIA ROAD
P.O. BOX 9133
CONCORD, MA 01742-9133

EXAMINER

TRAN, PHILIP B

ART UNIT PAPER NUMBER

2155

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/624,276

Applicant(s)

BROWN, DAVID A.

Examiner

Philip B Tran

Art Unit

2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10,12-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2, 4-10, 12-18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. This office action is in response to the amendment filed on 09/20/2004. Claims 1, 4-6, 9, 12, 17 and 20 have been amended. Claims 3, 11 and 19 have been previously canceled. Therefore, pending claims 1-2, 4-10, 12-18 and 20-24 are presented for further examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-10, 12-18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al (Hereafter, Muller), U.S. Pat. No. 6,021,132 in view of Singh et al (Hereafter, Singh), U.S. Pat. No. 6,625,159.

Regarding claim 1, Muller teaches a switch comprising :

a shared pool of buffers in the shared memory, the shared pool of buffers for storing data to be forwarded to any of the plurality of egress ports (= shared memory with pool of buffers shared by output ports) [see Abstract and Col. 2, Lines 20-63 and Figs. 2-4];

a multicast pool of buffers in the shared memory reserved for storing IP Multicast packets received from any ingress port to be forwarded to at least one egress port to members of the IP Multicast group (= multicast packets are received from any input port

and transferred to one or more output ports) [see Col. 7, Lines 30-41 and col. 9, Lines 27-34] ; and

a pool select logic which selects a free buffer to allocate from the reserved pool for storing data received from an ingress port to be forwarded to the egress port, and de-allocates the selected buffer after the data has been forwarded to the egress port (= shared memory manager 220 with buffer tracking unit 329 performing buffer allocation) [see Abstract and Figs 5-7 and Col. 9, Line 5 – Col. 10, Line 54].

Muller does not explicitly teach a plurality of reserved pools of buffers in a shared memory, each reserved pool of buffers associated with one of a plurality of egress ports and reserved for storing data to be forwarded to the egress port. However, Singh, in the same field of shared memory packet switching endeavor, discloses the system of shared memory switching with shared memory includes a plurality of reserved buffers [see Singh, Col. 2, Lines 21-40 and Col. 9, Lines 3-5]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of shared memory switching with shared memory includes a plurality of reserved buffers, disclosed by Singh, into the shared memory packet switching system as disclosed by Muller, in order to provide improved fairness in allocation of output buffers among input buffers [see Singh, Col. 2, Lines 13-19] and thus prevent a single port from dominating the memory causing a blocking condition [see Singh, Col. 8, Lines 20-24].

Regarding claim 2, Muller further teaches the pool select logic selects a free buffer in the shared pool upon detecting no free buffer in the reserved pool [see Col. 9, Line 59 – Col. 10, Line 20 and Col. 10, Lines 48 –54 and Col. 12, Lines 40-64].

Regarding claim 4, Muller further teaches the pool select logic selects a free buffer from the multicast pool upon detecting an IP Multicast data packet received from an ingress port [see Col. 8, Lines 22-36 and Col. 9, Lines 5-56].

Regarding claims 5-8, Muller further teaches a total free counter storing the number of free buffers in shared memory, the total free counter preset to the total number of buffers in the shared memory wherein the sum of the buffers in the multicast pool, the reserved pool and the shared pool is equal or greater than the total number of buffers in the shared memory wherein the pool select logic determines the availability of a free buffer in the shared memory dependent on the number of free buffers in the shared memory stored in the total free counter [see Col. 10, Line 8 – Col. 12, Line 6].

Claims 9-10 and 17-18 are rejected under the same rationale set forth above to claims 1-2.

Claims 12-16 and 20-24 are rejected under the same rationale set forth above to claims 4-8.

Response to Arguments

4. Applicant's arguments have been fully considered but they are not persuasive because of the following reasons:

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642F. 2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F. 2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant obviously attacks references individually without taking into consideration based on the teaching of combinations of references as shown in the following section. With respect to Muller, applicant seems to argue points the examiner has already construed Muller does not explicitly teach while restricting the arguments on the Muller-Singh combined to arguments of no motivation.

Muller teaches a switch comprising a shared pool of buffers in the shared memory, the shared pool of buffers for storing data to be forwarded to any of the plurality of egress ports. For example, Muller discloses a shared memory with pool of buffers shared by output ports [see Abstract and Col. 2, Lines 20-63 and Figs. 2-4]. In addition, Muller further teaches a multicast pool of buffers in the shared memory reserved for storing IP Multicast packets received from any ingress port to be forwarded to at least one egress port to members of the IP Multicast group. For example, Muller further discloses multicast packets are received from any input port and transferred to one or more output ports [see Col. 7, Lines 30-41 and col. 9, Lines 27-34]. Moreover, Muller further teaches and a pool select logic which selects a free buffer to allocate from the reserved pool for storing data received from an ingress port to be forwarded to the egress port, and de-allocates the selected buffer after the data has been forwarded to the egress port. For example, Muller discloses a shared memory manager 220 with

buffer tracking unit 329 performing buffer allocation [see Abstract and Figs 5-7 and Col. 9, Line 5 – Col. 10, Line 54].

Muller does not explicitly teach a plurality of reserved pools of buffers in a shared memory, each reserved pool of buffers associated with one of a plurality of egress ports and reserved for storing data to be forwarded to the egress port. However, Singh, in the same field of shared memory packet switching endeavor, discloses the system of shared memory switching with shared memory includes a plurality of reserved buffers [see Singh, Col. 2, Lines 21-40 and Col. 9, Lines 3-5]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teaching of shared memory switching with shared memory includes a plurality of reserved buffers, disclosed by Singh, into the shared memory packet switching system as disclosed by Muller, in order to provide improved fairness in allocation of output buffers among input buffers [see Singh, Col. 2, Lines 13-19] and thus prevent a single port from dominating the memory causing a blocking condition [see Singh, Col. 8, Lines 20-24].

As a result, cited prior art does disclose a system and method as broadly claimed by the applicant. Applicant has still failed to identify specific claimed limitations that would define a clearly patentable distinction over prior arts. Therefore, the examiner asserts that cited prior art teaches or suggests the subject matter recited in independent claims. Dependent claims are also rejected at least by virtue of dependency on independent claims and by other reasons shown above. Accordingly, claims 1-2, 4-10, 12-18 and 20-24 are respectfully rejected.

Other References Cited

5. The following references cited by the examiner but not relied upon are considered pertinent to applicant's disclosure.

- A) Barri et al, U.S. Pat. No. 6,657,962.
- B) Adam et al, U.S. Pat. No. 6,320,861.
- C) Rivers, U.S. Pat. No. 6,535,963.
- D) Klausmeier et al, U. S Pat. No. 6,487,202.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CAR 1.136(a).

A SHORTENED STATUTORY PERIOD FOR REPLY TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE MAILING DATE OF THIS ACTION. IN THE EVENT A FIRST REPLY IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CAR 1.136(A) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT, HOWEVER, WILL THE STATUTORY PERIOD FOR REPLY EXPIRE LATER THAN SIX MONTHS FROM THE MAILING DATE OF THIS FINAL ACTION.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Tran whose telephone number is (571) 272-3991. The Group fax phone number is (703) 872-9306.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam, can be reached on (571) 272-3978.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Philip Tran
Philip Tran
Art Unit 2155
Feb 17, 2005

Hosain Alam
HOSAIN ALAM
SUPERVISORY PATENT EXAMINER